WHAT IS CLAIMED IS:

1. An optical disk reproducing apparatus comprising:

a signal extracting section configured to emit light on to a track of a disk on which information has been recorded during rotation of the disk, to extract the information by receiving the light which is reflected from the track or is passed through the track, to convert the information to an electric signal, and to output the electric signal;

an information signal generating circuit configured to generate a signal including the information which is recorded on the disk and a tracking error signal which shows a deviation of a relative position in the radial direction of the disk between the light which the signal extracting section emits and the track from the signal extracting section;

a tracking moving section configured to move the position of the light emitted from the signal extracting section in the radial direction of the disk;

a tracking control circuit configured to generate a tracking control signal in response to the tracking error signal such that the position of the emitted light from the signal extracting section is maintained on the track;

an eccentricity signal generating circuit configured to generate an eccentricity showing

a position deviation between the center point of the track of the disk and the rotation center point of the disk on the basis of the output of the information signal generating circuit; and

a tracking correcting circuit configured to substantially add the output of the eccentricity signal generating circuit to the output of the tracking control circuit to drive and control the tracking moving section on the basis of the added output.

2. An optical disk reproducing apparatus according to claim 1, wherein the eccentricity signal generating circuit comprises:

a reading-out speed detecting circuit configured to detect the reading-out speed of the information from the output of the information signal generating circuit, and

a band-pass filter configured to extract the component which is near the rotation frequency of the disk within the range of the change in the reading-out speed of the information from the output of the reading-out speed detecting circuit to output the eccentricity signal.

3. An optical disk reproducing apparatus according to claim 2, wherein the eccentricity signal generating circuit comprises:

a storage circuit to which the output of the band-pass filter is input and which stores the output

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of the band-pass filter at least during one rotation of the disk; and

a selecting circuit to which the output of the band-pass filter is input as a first input and the output of the storage circuit is input as a second input and which outputs one of the inputs selectively;

wherein the tracking correcting circuit adds the selected output of the selecting circuit to the output of the tracking control circuit.

4. An optical disk reproducing apparatus according to claim 2, wherein the eccentricity signal generating circuit comprises:

a storage circuit to which the output of the reading-out speed detecting circuit is input and which stores the output of the reading-out speed detecting circuit at least during one rotation of the disk, and

a selecting circuit to which the output of the reading-out speed detecting section is input as a first input and the output of the storage circuit is input as a second input, and which outputs one of these inputs selectively to send the same to the band-pass filter.

5. An optical disk reproducing apparatus according to claim 3, wherein the selecting circuit selects the first input during reading-out of the information from the disk, and selects the second input while the tracking control performed by the tracking control circuit is put in an off state or while the

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tracking control performed by the tracking control circuit is turned off and the position of the emitted light of the signal extracting section is being moved by the tracking moving section.

6. An optical disk reproducing apparatus according to claim 4, wherein the selecting circuit selects the first input during reading-out of the information from the disk, and selects the second input while the tracking control performed by the tracking control circuit is put in an off state or while the tracking control performed by the tracking control circuit is turned off and the position of the emitted light of the signal extracting section is being moved by the tracking moving section.

7. An optical disk reproducing apparatus according to claim 3, wherein the selecting circuit selects the first input when information is first read out from the disk, and selects the second input which is the output of the storage circuit after the input signal corresponding to at least one rotation of the disk is stored in the storage circuit.

8. An optical disk reproducing apparatus according to claim 4, wherein the selecting circuit selects the first input when information is first read out from the disk, and selects the second input which is the output of the storage circuit after the input signal corresponding to at least one rotation of the

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disk is stored in the storage circuit.

9. An optical disk reproducing apparatus according to claim 3, further comprising a rotation angle detector configured to output a pulse signal for each approximately constant rotation angle in synchronism with rotation of the disk,

wherein, when the storage circuit stores the input signal corresponding to at least one rotation of the disk, the storage circuit stores the same in synchronism with the output pulse signal of the rotation angle detector, and when the storage circuit outputs the stored signal, the storage circuit outputs the same in synchronism with the output pulse signal of the rotation angle detector.

10. An optical disk reproducing apparatus according to claim 4, further comprising a rotation angle detector configured to output a pulse signal for each approximately constant rotation angle in synchronism with rotation of the disk,

wherein, when the storage circuit stores the input signal corresponding to at least one rotation of the disk, the storage circuit stores the same in synchronism with the output pulse signal of the rotation angle detector, and when the storage circuit outputs the stored signal, the storage circuit outputs the same in synchronism with the output pulse signal of the rotation angle detector.

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11. An optical disk reproducing apparatus according to claim 5, further comprising a rotation angle detector configured to output a pulse signal for each approximately constant rotation angle in synchronism with rotation of the disk,

wherein, when the storage circuit stores the input signal corresponding to at least one rotation of the disk, the storage circuit stores the same in synchronism with the output pulse signal of the rotation angle detector, and when the storage circuit outputs the stored signal, the storage circuit outputs the same in synchronism with the output pulse signal of the rotation angle detector.

12. An optical disk reproducing apparatus according to claim 6, further comprising a rotation angle detector configured to output a pulse signal for each approximately constant rotation angle in synchronism with rotation of the disk,

wherein, when the storage circuit stores the input signal corresponding to at least one rotation of the disk, the storage circuit stores the same in synchronism with the output pulse signal of the rotation angle detector, and when the storage circuit outputs the stored signal, the storage circuit outputs the same in synchronism with the output pulse signal of the rotation angle detector.

13. An optical disk reproducing apparatus

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according to claim 7, further comprising a rotation angle detector configured to output a pulse signal for each approximately constant rotation angle in synchronism with rotation of the disk,

wherein, when the storage circuit stores the input signal corresponding to at least one rotation of the disk, the storage circuit stores the same in synchronism with the output pulse signal of the rotation angle detector, and when the storage circuit outputs the stored signal, the storage circuit outputs the same in synchronism with the output pulse signal of the rotation angle detector.

14. An optical disk reproducing apparatus according to claim 8, further comprising a rotation angle detector configured to output a pulse signal for each approximately constant rotation angle in synchronism with rotation of the disk,

wherein, when the storage circuit stores the input signal corresponding to at least one rotation of the disk, the storage circuit stores the same in synchronism with the output pulse signal of the rotation angle detector, and when the storage circuit outputs the stored signal, the storage circuit outputs the same in synchronism with the output pulse signal of the rotation angle detector.

15. An optical disk reproducing apparatus according to claim 2, wherein the reading-out speed

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detecting section measures the frequency of synchronization signals which are recorded on the disk at constant intervals in advance.

16. An optical disk reproducing apparatus according to claim 3, wherein the reading-out speed detecting section measures the frequency of synchronization signals which are recorded on the disk at constant intervals in advance.

17. An optical disk reproducing apparatus according to claim 2, further comprising

a voltage controlled oscillating circuit whose oscillating frequency varies according to at least one control voltage,

a phase comparing circuit configured to compare the phases of the output of the voltage control oscillating circuit the signal including the information which is recorded on the disk for generation performed by the information signal generating circuit with each other to output the phase error as an electric signal, and

a phase locked loop circuit which comprises a filter circuit configured to remove unnecessary frequency components from the output of the phase comparing circuit to generate the control voltage of the voltage control oscillating circuit and which generating a clock synchronized with the signal including the information which is recorded on the disk

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for generation preformed by the information signal generating circuit, wherein

the phase locked loop circuit is used as the reading-out speed detecting circuit, and the control voltage of the voltage control oscillating circuit which is generated by the filter circuit is output to the band-pass filter.

18. An optical disk reproducing apparatus according to claim 3, further comprising

a voltage controlled oscillating circuit whose oscillating frequency varies according to at least one control voltage,

a phase comparing circuit configured to compare the phases of the output of the voltage control oscillating circuit the signal including the information which is recorded on the disk for generation performed by the information signal generating circuit with each other to output the phase error as an electric signal, and

a phase locked loop circuit which comprises a filter circuit for removing unnecessary frequency components from the output of the phase comparing circuit to generate the control voltage of the voltage control oscillating circuit and which generating a clock synchronized with the signal including the information which is recorded on the disk for generation preformed by the information signal

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generating circuit, wherein

the phase locked loop circuit is used as the reading-out speed detecting circuit, and the control voltage of the voltage control oscillating circuit which is generated by the filter circuit is output to the band-pass filter.

19. An optical disk reproducing method comprising the steps of:

extracting a reproduced signal from a track of a disk by emitting light on to the track during rotation of the disk and by receiving the light which is reflected from the track or passed through the track;

generating, from the reproduced signal, an information signal recorded on the disk and a tracking error signal representing a deviation of a relative position in the radial direction of the disk between the incident light and the track;

moving an incident position of the emitted light on the track in the radial direction of the disk to perform tracking control;

generating an eccentricity signal denoting a deviation between the center of the track and the rotation center of the disk on the basis of the information signal; and

adding the eccentricity signal and the tracking error signal for obtaining an added signal to correct the tracking position of the incident light on the

basis of the added signal.

20. An optical disk reproducing method according to claim 19, wherein the eccentricity signal generating step comprises:

detecting the reading-out speed of the information from the information signal, and

extracting the frequency component which is near the rotation frequency of the disk within the range of the change in the reading-out speed of the information from the detected reading-out speed to output the eccentricity signal.

21. An optical disk reproducing method according to claim 20, further comprising the steps of:

storing the eccentricity signal at least during one rotation of the disk;

selecting one of the generated eccentricity signal and the stored eccentricity signal; and

performing the tracking control on the basis of the selected one of the eccentricity signals.